Structural Firefighting, Thermal Stress and Return to Work

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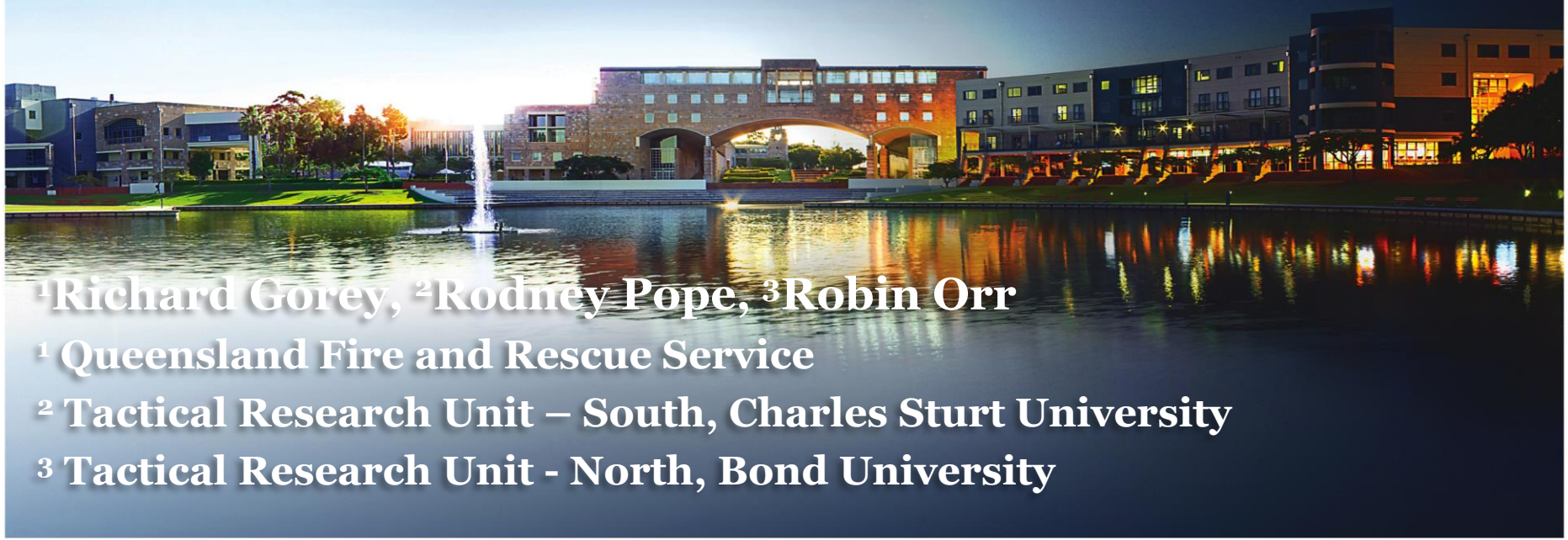

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Aim

To investigate the impact of Structural Firefighting on firefighter hydration and core temperatures.

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Methods

- 3 Studies over 3 years (1. n=7, 2. n=7, 3. n=22)
- Qualified Firefighters conducting occupational tasks for 15mins in a Live Fire Compartment
- Full firefighting PPC with BA
- Measures: Body weight, USG, Core Temperature
- Ethics approved by Bond University HREC, Protocol Number RO1761

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Methods

- Fire temperatures
  - 40.0 °C (max 50.9 °C) at 0.3m above the floor
  - 130-155 °C at 1.1m above the floor
  - 458.3 °C (max 571.5°C) at the ceiling

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Key Findings

- Some firefighters commenced in a dehydrated state.
- Significant rise in core temperatures (average rise 2.4C)
- Significant decrease in total body weight (average loss 1.2kg)
- No Significant change in USG.

Conclusion

- Notable thermal stress during actual fire suppression tasks
- This can lead to a heightened display of irritability by the participant.

Clinical Implications

- For the rehabilitation physiotherapist understanding workplace demands along with the effects these have on the operator, assists in developing rehabilitation strategies to return firefighters safely to operational status.